



Original Article

Study of Nail Changes in Psoriasis

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Abstract

Psoriasis is a common, chronic and recurrent inflammatory disease of the skin. Clinically, disease can present with cutaneous and nail lesions. Both fingernails and toenails may be affected. The present study was conducted to study the abnormal nail changes in patients with psoriasis and to find correlation between nail changes and some clinical parameters. The study was undertaken in Skin & VD outpatient department of Rajshahi Medical College Hospital, Rajshahi. One hundred patients of psoriasis of all age and both sexes were enrolled for studying the nail changes, in whom diagnosis of psoriasis was made clinically. In any case of abnormalities clinically suspected of fungal infection, further mycological investigations were performed. Nail changes were present in 60 patients (60%, $P < 0.05$) with psoriasis. Pitting was the most common finding on fingernails (70%), followed by onycholysis (35%).

Subungual hyperkeratosis was the most common finding in toenails (34.37%). A very strong association was seen between nail changes and joint pain. There was positive correlation between nail abnormalities and duration of psoriasis.

Nail involvement is common in patients with psoriasis. Pitting, onycholysis, subungual hyperkeratosis are the most frequent nail changes in psoriatic patients.

Key words: Psoriasis, Nail changes, pitting, Onycholysis, subungual hyperkeratosis.

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Introduction

Psoriasis is a chronic, recurrent and common inflammatory skin disease.¹ It affects about 2% of general population.² It is a genetically determined proliferative disease of the skin manifesting as well defined pink or dull red lesion, surmounted by characteristic silvery scaling.³ Classical disease in addition to skin also involves joints and nails.⁴ Nail involvement is a common symptom in psoriasis.⁵ Nails can be affected in 15-50% of

patients with psoriasis and the lifetime incidence of nail involvement reaches 80-90% of psoriasis patients.⁶ Psoriasis may also be limited to the nail without any evidence elsewhere on the body.⁷

Nail changes are seen in association with all types of psoriasis of the skin and is frequently present with psoriatic arthropathy.⁸ In the presence of joint involvement, nail changes can reach 80%.⁹

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A wide spectrum of nail abnormalities is seen among patients with psoriasis and both fingernails and toenails may be affected. In order of decreasing frequency, nail changes of psoriasis are pitting, onycholysis, subungual hyperkeratosis, nail plate discoloration, uneven nail surface, splinter haemorrhages and lastly acute and chronic paronychia.¹⁰

The specific pathogens of psoriasis is not completely understood, but the underlying mechanism involve a complex interplay between epidermal keratinocytes, T lymphocytes as well as other leukocytes and vascular endothelium.^{11, 12}

The morphology of nail change will depend on whether the proximal nail fold, nail matrix, nail bed or hyponychium is involved e.g. pitting arising from defect in keratinization of the dorsal side of the proximal nail fold. Psoriatic process within the nail bed may give rise to yellowish macule beneath the nail plate extending distally toward hyponychium. Nail matrix involvement may result in onychodystrophy. Other manifestations like onychorrhexis, Beau's line, leuconychia, focal onycholysis, thinned nail plate are seen in nail matrix involvement, whereas oil drop sign, subungual hyperkeratosis, onycholysis occur in affection of nail bed and hyponychium.^{13, 14}

Current study was targeted to study the abnormal nail changes in patients with psoriasis.

Material and Methods

The study was conducted in Skin & VD outpatient department of Rajshahi Medical College Hospital, Rajshahi over a period of one year (July 2015-Jun 2016).

One hundred patients with psoriasis of all ages and both sexes were included in the study. Clinically diagnosed cases of psoriasis fulfilling the inclusion criteria were enrolled after a written consent. A detailed history was recorded including age of the patients, age of onset, site and duration of the disease, mode of spread, seasonal variation, associated joint pain, personal history including relevant drug history, past history and family history. A thorough clinical examination was done in each patient consisting of general survey,

cutaneous and systemic examinations including assessment of joint involvement. Finger and toenails were clinically observed and nail changes were noted.

Diagnosis of psoriasis was based on clinical findings and if necessary, a skin biopsy and histopathology was performed. KOH preparation of nail scrapping was examined where onychomycosis was suspected. In addition, culture on Sabouraud's dextrose agar medium was done as part of further mycological investigations. Only those patients with onychopathy negative for fungal element in KOH preparation or culture were included in the study.

Patients with onychomycosis, any concomitant dermatological or systemic disease and other causes of nail changes, like congenital and traumatic dystrophy were excluded from this study.

[Statistical comparisons were performed using the chi-square test. The data were considered statistically significant if P values were less than 0.05 (P<0.05).]

Results

A total of 100 patients were included in the study.

Table 1: Age and sex distribution

Age (years)	Mean	35.5
	Range	15-65
Sex	Male	54 (54%)
	Female	46 (46%)

As shown in Table 1, 54 patients (54%) were male and 46 patients (46%) were female and their age ranged from 15 to 65 years (mean age 35.5). The age of the patients at the onset of the disease had a wide range from 15 to 45 years. The disease duration varied between 3 months to 24 years (mean duration : 65.2 month).

Table 2: Frequency of nail involvement (n=60)

Nails affected	Number of patients	Percentage
1. Only fingernails	28	47%
2. Only toenails	20	33%
3. Both finger & toenails	12	20%
4. Total fingernails (1+3)	40	67%
5. Total toenails (2+3)	32	53%

As shown in Table 2, nail changes were present in 60 (60%, $P < 0.05$) patients with psoriasis, while remaining 40 (40%) patients had normal nails. Among the 60 patients with nail changes 28 (47%) had their fingernails involved, 20 (33%) had toenails involved while remaining 12 (20%) patients had both finger and toenails involved.

Among the 60 patients with nail involvement, there were 32 (53%) males and 28 (47%) females.

Joint involvement in the form of joint pain or restricted movement was seen in 55 patients (55%). Of the 55 patients with joint involvement, 40 (73%) had nail changes.

Table 3: Pattern of nail involvement

Nail Change	Fingernail (n=40)	Toenail (n=32)
1. Pitting	28 (70%)	8 (25%)
2. Onycholysis	14 (35%)	8 (25%)
3. Subungual hyperkeratosis	8 (20%)	11 (34.37%)
4. Thickening	7 (17.5%)	8 (25%)
5. Transverse groove	6 (15%)	4 (12.5%)
6. Destruction	4 (10%)	2 (6.25%)
7. Splinter haemorrhage	3 (7.5%)	0 (0%)

Table 3, shows the pattern and frequency of nail changes. The commonest change in fingernail was pitting (70%), whereas in toenail, subungual hyperkeratosis was the commonest (34.37%).

There was a significant difference in the prevalence of pitting of nail between fingernail and toenail ($p < 0.001$), pitting being more common in fingernails than in toenails.

Male patients were a little more affected than female (53% vs 47%). There was correlation between the duration of psoriasis and prevalence of nail involvement.

Discussion

Our study on nail changes in psoriatic patients revealed presence of nail involvement in 60% cases. Ahmed et al.⁴ have also reported that 58% patients with psoriasis had nail changes. Kurtovic NO et al.² showed that nail changes were present in 60.9% patients with psoriasis. The present study is almost similar to the previous studies.

In our study, we found that fingernails were more frequently affected than toenails in psoriasis. The morphology of nail changes in fingernails was in accordance to what was found in earlier studies, with pitting being the most common manifestation.^{2,3,7}

In the present study we observed that, subungual hyperkeratosis was the commonest change (34.37%) in the toenail. Our findings are similar to previous studies.^{2,3} The pathogenesis behind this difference in manifestation (pitting being most common in fingernails, subungual hyperkeratosis being most common in toenails) might be due to proximal nail fold being most commonly affected in fingernails whereas in toenails the nail bed and hyponychium affection being commonest.

Our findings also support the previous studies.^{2,3,4} regarding the presence of definite association between nail change and joint involvement in psoriasis. A person with psoriasis having nail changes is at a greater risk of developing joint pain.

In our study, we observed slight male preponderance (53%). The prevalence of nail abnormality was well connected to the duration of psoriasis. The longer the psoriasis was present, the more the nail changes prevailed. There was no association between the incidence of nail changes with the age of patients as well as with the extent of skin lesions.

Conclusion

In conclusion, our study confirms that nail involvement is common in patients with psoriasis. Pitting, onycholysis and subungual hyperkeratosis are the most frequent nail changes in psoriatic patients.

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